MCBS
Medicare Current Beneficiary Survey

2017 | DATA USER'S GUIDE: PUBLIC USE FILE

Centers for Medicare & Medicaid Services (CMS)
Office of Enterprise Data and Analytics (OEDA)

Version Control Log

Date	Version	Revisions
10/24/2019	1.0	Initial version published.

TABLE OF CONTENTS

LIST OF EXHIBITS

ACRONYM LIST

AAPOR	American Association for Public Opinion Research
ACCESSCR	LDS Survey File Access to Care segment
ACCSSMED	LDS Survey File Access to Care, Medical segment
ADMNUTLS	LDS Survey File Administrative Utilization Summary segment
CAPI	Computer-Assisted Personal Interviewing
CHRNCOND	LDS Survey File Chronic Conditions segment
CMS	Centers for Medicare & Medicaid Services
CSV	Comma-separated values file
DEMO	LDS Survey File Demographics segment
DUA	Data Use Agreement
EVRWGTS	LDS Survey File Ever Enrolled Population Weight Segment
FALLS	LDS Survey File Falls segment
FOODINS	LDS Survey File Food Insecurity segment
GENHLTH	LDS Survey File General Health segment
HHCHAR	LDS Survey File Household Characteristics segment
HHS	U.S. Department of Health and Human Services
HIC	Health Insurance Claim
HISUMRY	LDS Survey File Health Insurance Summary
HITLINE	LDS Survey File Health Insurance Timeline segment
IRB	Institutional Review Board
LDS	Limited Data Set(s)
MA	Medicare Advantage
MAPLANQX	LDS Survey File Medicare Advantage Plan Questions segment
MCREPLNQ	LDS Survey File Medicare Plan Beneficiary Knowledge Questions segment
MCBS	Medicare Current Beneficiary Survey
NAGIDIS	LDS Survey File NAGI Disability segment
NICOALCO	LDS Survey File Nicotine and Alcohol segment
NORC	NORC at the University of Chicago
OMB	Office of Management and Budget
PHI	Protected Health Information
PII	Personally Identifiable Information
PREVCARE	LDS Survey File Preventive Care segment
PSU	Primary Sampling Units
PUF	Public Use File
RXMED	LDS Survey File RX Medications segment
SAS	Statistical Analysis System
SATWCARE	LDS Survey File Satisfaction with Care segment
SSU	Secondary Sampling Units
USCARE	LDS Survey File Usual Source of Care segment
USU	Ultimate Sampling Unit
VISHEAR	LDS Survey File Vision and Hearing segment

1. INTRODUCTION

Over the past several years, the Centers for Medicare and Medicaid Services (CMS) has made it a priority to make more data available, including releasing to the public an unprecedented amount of information on services and procedures provided to Medicare beneficiaries. CMS provides users with multiple ways to access Medicare Current Beneficiary Survey (MCBS) data, and a wide array of documentation is publically available on the CMS MCBS website. MCBS data are made available via two annual Limited Data Set (LDS) releases and a MCBS Public Use File (MCBS PUF) based on the Survey File LDS.

The content of the MCBS PUF is governed by its central focus of serving as a unique source of information on beneficiaries' health and well-being that cannot be obtained through CMS administrative sources alone. The file includes data related to Medicare beneficiaries' access to care, health status, other information regarding beneficiaries' knowledge of, attitudes toward, and satisfaction with their health care, as well as demographic data and information on all types of health insurance coverage. Disclosure protections have been applied to the file, including de-identification and other methods; as a result, the MCBS PUF does not require a Data Use Agreement (DUA). In contrast, the MCBS LDS releases contain beneficiary-level protected health information (PHI) and therefore require a DUA. The MCBS PUF is not intended to replace the more detailed LDS files; rather, it makes available a general-use publically-available alternative that provides the highest degree of protection to the Medicare beneficiaries' PHI.

The main benefits of the MCBS PUF are:

1. Increased data access for researchers of the MCBS through a free file download that is consistent with other U.S. Department of Health and Human Services (HHS) public-use survey files;

2. Increased policy-relevant analyses, by attracting new researchers and policy-makers, for whom the cost and time associated with accessing the MCBS LDS can pose significant deterrents to use.

This user guide contains information about the 2017 MCBS PUF. It contains detailed information about the MCBS and specific background information to help data users understand and analyze the PUF. This guide is updated each time a new set of PUF data are released.

Readers interested in understanding or analyzing the 2017 MCBS data should also familiarize themselves with the content of the *2017 Data User's Guide: Survey File* and the *2017 MCBS Methodology Report* documents in order to obtain an overview of the survey, questionnaires, sample design, and other topics relevant to the MCBS. Data users can access these documents along with other data documentation at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks.html. Data users interested in a collection of charts and tables presenting estimates from the LDS releases can access the MCBS Chartbook at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Data-Tables.html.

What's New in 2017?

Below, data users will note highlights and updates to the MCBS PUF for the 2017 data year. Detailed information about changes to the 2017 MCBS, sampling, questionnaires, documentation, and data processing is available in the *2017 MCBS Data User's Guide: Survey File.*

1.1   What's New in the 2017 MCBS PUF?

The 2017 MCBS PUF features several important updates.

Beginning in 2017, the MCBS PUF is composed of three seasonal data segments (Fall, Winter, and Summer), which allows for the release of data collected in non-fall rounds. Prior to 2017, the PUF excluded data collected in the Winter and Summer rounds. Each seasonal segment contains segment-specific PUF ever enrolled weights. Section 7.1 of this guide, Weights and Variance Estimation, provides guidance on using these weights.

In addition to the new data available in the Winter and Summer segments, the 2017 MCBS PUF Fall segment also now includes variables which had previously only been available in the Survey File LDS as well as some new variables from content available for the first time in the 2017 Survey File LDS. New MCBS PUF content areas for 2017 include trouble paying medical bills, diabetes control, food insecurity and knowledge about Medicare, among others. Lastly, some variables included in the 2016 MCBS PUF have been removed in the 2017 MCBS PUF to eliminate redundancy, due to low cell sizes, or because they are no longer available in the 2017 Survey File LDS.

Exhibit 1.1.1 presents a comparison between the number of variables in the MCBS PUF for data years 2013, 2015, 2016 and 2017, including weights for the seasonal segments.

Exhibit 1.1.1: Number of Variables in the 2013, 2015, 2016, and 2017 MCBS PUF
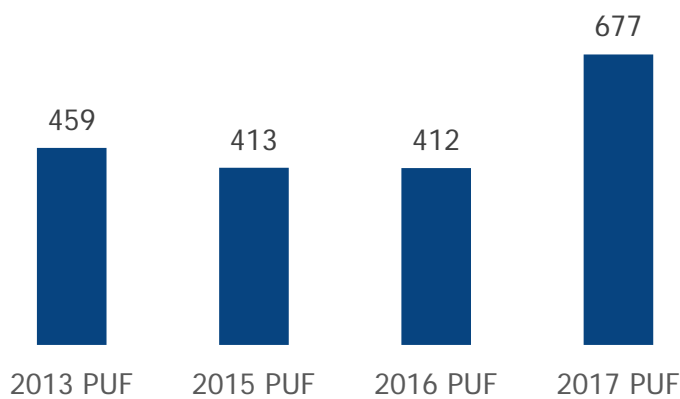
Exhibit 1.1.2 presents a summary of the content updates in the 2017 MCBS PUF.

Exhibit 1.1.2: 2017 MCBS PUF Content Updates

Segment	Variable	Variable Label	Description
PUF_FALL	DEM_IPR_IND	Income Poverty Ratio Medicare Threshold	Added
PUF_FALL	ACC_HCTRBMNY	Troub getting care: cost, insuff. money	Added
PUF_FALL	ACC_PAYPROB	Problem paying medical bills	Added
PUF_FALL	ACC_COLAGNCY	Collection agency due to medical bills	Added
PUF_FALL	ACC_PAYOVRTM	Medical bills being paid off over time	Added
PUF_FALL	HLT_DIAINSUL	Takes insulin	Added
PUF_FALL	HLT_DIAMEDS	Takes prescribed diabetes pill/medicine	Added
PUF_FALL	HLT_DIATEST	Tests own blood for sugar/glucose	Added
PUF_FALL	HLT_DIATENYR	Foot exam in last year	Added
PUF_FALL	HLT_DIACTRLP	Blood sugar well controlled	Added
PUF_FALL	HLT_DIAHYPO	Ever experience hypoglycemia	Added
PUF_FALL	HLT_DIAMNGE	Had diabetes self management course	Added

Segment	Variable	Variable Label	Description
PUF_FALL	HLT_DTBLGTPL	Has trouble getting places	Added
PUF_FALL	HLT_DREDTRAV	Reduced day-to-day travel	Added
PUF_FALL	HLT_DASKRIDE	Ask others for rides	Added
PUF_FALL	HLT_DGIVUPDR	Given up driving altogether	Added
PUF_FALL	HLT_DLIMDRIV	Limited driving to daytime	Added
PUF_FALL	HLT_DUSETRNS	Use taxi or special transportation	Added
PUF_FALL	PRV_DIARISK	Ever told at high risk for diabetes	Added
PUF_FALL	PRV_COLHEAR	Heard of colon cancer before today	Added
PUF_FALL	PRV_COLHTEST	Given home fecal blood test (FOBT)	Added
PUF_FALL	PRV_COLHKIT	Heard of home FOBT	Added
PUF_FALL	PRV_COLCARD	Sent card in for most recent FOBT	Added
PUF_FALL	PRV_COLFDOC	Had FOBT in Drs office	Added
PUF_FALL	PRV_COLRECNT	How long since FOBT	Added
PUF_FALL	PRV_COLSCOPY	Colonoscopy/sigmiodoscopy (ever)	Added
PUF_FALL	PRV_WHENSCOP	How long since colonoscopy	Added
PUF_FALL	PRV_HEARSCOP	Heard of colonoscopy before today	Added
PUF_FALL	PRV_COLDRREC	Dr ever recommend colonoscopy	Added
PUF_FALL	PRV_COLSCRNS	Know Medicare help pay screening test	Added
PUF_FALL	PRV_OSTEVERT	Ever talked to dr. about osteoporosis	Added
PUF_FALL	PRV_OSTHRISK	Told at high risk for osteoporosis	Added
PUF_FALL	HOU_D_COMPHH	Household Composition Code	Added
PUF_WINTER	ACW_D_ERVIST	ER visit in this or any of prev 2 rounds	Added
PUF_WINTER	ACW_D_OPVIST	OP visit in this or any of prev 2 rounds	Added
PUF_WINTER	ACW_D_MDVIST	MD visit in this or any of prev 2 rounds	Added
PUF_WINTER	ACW_DVNEED	Ever a time SP couldn't get dental care?	Added
PUF_WINTER	ACW_DVNDCOST	Cldn't get dental: cost	Added
PUF_WINTER	ACW_PROVYR	SP seen provider in last 12 months	Added
PUF_WINTER	ACW_DOCHLTH	How often provider asks about SP's life	Added
PUF_WINTER	ACW_DOCEASY	Provider explains things clearly	Added
PUF_WINTER	ACW_HLTHIDEA	Provider asks to improve health	Added
PUF_WINTER	ACW_STHLTHGL	Provider talked to SP about health goals	Added
PUF_WINTER	ACW_MTHLTHGL	Care helped reach goals	Added
PUF_WINTER	ACW_USUNWRNG	Dr completely understands what's wrong	Added
PUF_WINTER	ACW_ORDRTEST	Provider ordered tests	Added
PUF_WINTER	ACW_TSTFLWUP	Provider followed up about tests	Added
PUF_WINTER	ACW_RQSTRSLT	How often SP requested test results	Added
PUF_WINTER	ACW_RSLTEASY	How often test results presented clearly	Added
PUF_WINTER	ACW_HLTHSRVC	SP needed home services	Added
PUF_WINTER	ACW_GIVEINST	Provider gave health care instructions	Added
PUF_WINTER	ACW_ANYRX	SP took prescription medcines	Added
PUF_WINTER	ACW_TALKRX	Provider told SP how to take meds	Added
PUF_WINTER	ACW_BADRCTN	Provider talked about bad reactions	Added
PUF_WINTER	ACW_CARESPCL	See specialist outside PCP office	Added
PUF_WINTER	ACW_DRINFRMD	How often PCP seem informed of spec care	Added
PUF_WINTER	ACW_REMINDDR	How often remind PCP about spec care	Added
PUF_WINTER	ACW_STPMSPCL	Specialist outside pcp prescribe Rx	Added
PUF_WINTER	ACW_TALKPMS	How often PCP talk abt spec prescr'd Rx	Added
PUF_WINTER	ACW_KNOWSPCL	Specialist knows enough of med history	Added
PUF_WINTER	ACW_DRREPEAT	How often SP repeats info to specialist	Added

Segment	Variable	Variable Label	Description
PUF_WINTER	ACW_TESTRSLT	Specialists know SP test results	Added
PUF_WINTER	ACW_HOSADMIT	SP admitted to hospital overnight	Added
PUF_WINTER	ACW_PRVNOMED	One provider knew all SP's medicines	Added
PUF_WINTER	ACW_NOTAVAIL	Med records not available for Dr appt	Added
PUF_WINTER	ACW_EMEDREC	Does PCP enter health info in computer	Added
PUF_WINTER	KNW_KNOWMC	How easy is Mcare to understand	Added
PUF_WINTER	KNW_KCARKNOW	What thinks they know about Mcare	Added
PUF_WINTER	KNW_KNHAVCOM	Has personal computer in home	Added
PUF_WINTER	KNW_KNETPRST	Ever use Internet to get info	Added
PUF_WINTER	KNW_KNETFRND	Has someone to get info from Internet	Added
PUF_WINTER	KNW_KNETOFTN	How often access Internet seeking info	Added
PUF_WINTER	KNW_KVSITWEB	Has visited website for Medicare info	Added
PUF_WINTER	KNW_KCHIHELP	Who makes health insurance decisions	Added
PUF_WINTER	ACW_D_ERVIST	ER visit in this or any of prev 2 rounds	Added
PUF_WINTER	ACW_D_OPVIST	OP visit in this or any of prev 2 rounds	Added
PUF_SUMMER	FIS_FOODLAST	How often household afford replace food	Added
PUF_SUMMER	FIS_AFFDMEAL	How often household afford eat healthy	Added
PUF_SUMMER	FIS_SKIPMEAL	If adults skip meals	Added
PUF_SUMMER	FIS_EATLESS	If SP can't afford food and eats less	Added
PUF_SUMMER	RXS_PDEASY	Mcare Rx drug benefit easy understand	Added
PUF_SUMMER	RXS_PDKNOW	Mcare Rx drug benefit knowledge	Added
PUF_SUMMER	RXS_PDSATSFP	Mcare Rx plan: satisfied w info	Added
PUF_SUMMER	RXS_PDCONFIP	Confident level of coverage meets needs	Added
PUF_SUMMER	RXS_RXUSEPLN	Used Mcare Rx drug plan past yr	Added
PUF_SUMMER	RXS_RXCOSTLY	Compared to last year, premium cost	Added
PUF_SUMMER	RXS_RXAMNTLY	Compared to last year, Rx cost	Added
PUF_SUMMER	RXS_PDNOCVG	Rx that are not covered	Added
PUF_SUMMER	RXS_RXCHGMED	Change to generic for coverage	Added
PUF_SUMMER	RXS_RXSWTCH	Change to different drug for coverage	Added
PUF_SUMMER	RXS_RXPARTIC	Current pharmacy participation	Added
PUF_SUMMER	RXS_PDRXRATP	Level of satisfaction with Rx coverage	Added
PUF2016	ADM_H_ENT	Medicare entitlement code for the year	Removed
PUF2016	ADM_ACOFLAG	Accountable Care Organization (ACO) flag	Removed
PUF2016	INS_MCAIDHMO	Enrolled in a Medicaid HMO	Removed
PUF2016	INS_MADVRX	Medicare Advantage plan covers drugs	Removed
PUF2016	INS_MTFCOVER	Ever recv'd services at military tx fac	Removed
PUF2016	INS_PRIVIP	Private plan covers inpatient costs	Removed
PUF2016	INT_WHYPROXY	Why proxy is needed	Removed
PUF2016	DEM_METRO	Metro status	Removed
PUF2016	ACC_OPDFLAG	Flag indicates if had outpatient visit	Removed
PUF2016	ACC_D_OPTIME	Minutes wait at OPD	Removed
PUF2016	ACC_MDFLAG	Flag indicates if had MD visit	Removed
PUF2016	ACC_MCFOLUP	Satisfaction: follow up after initial tx	Removed
PUF2016	ACC_SCRMAIN	Main reason to not see Dr	Removed
PUF2016	ACC_DHPLAN	MPDP/MADV have cvg gap	Removed
PUF2016	ACC_DHTHISYR	Start cvg gap this year	Removed
PUF2016	ACC_ACCOTHER	Someone accompanies for other reason	Removed
PUF2016	ACC_USHOWLNG	Years seeing doc/going service to place	Removed
PUF2016	ACC_PREVMEDC	Before usual Dr ever seen other doc	Removed

Segment	Variable	Variable Label	Description
PUF2016	ACC_USCOMPET	Dr is competent and well-trained	Removed
PUF2016	ACC_USUNWRNG	Dr completely understands what's wrong	Removed
PUF2016	ACC_USHURRY	Dr seems to be in a hurry	Removed
PUF2016	ACC_USEXPPRB	Dr doesn't explain medical problems	Removed
PUF2016	ACC_USDISCUS	Hlth probs shld be discussed but are not	Removed
PUF2016	ACC_USFAVOR	Dr acts as if doing a favor by talking	Removed
PUF2016	ACC_USTELALL	Dr tells all about med condition/tx	Removed
PUF2016	ACC_USANSQUX	Dr answers all questions	Removed
PUF2016	ACC_USCONFID	Have great confidence in Dr	Removed
PUF2016	ACC_USDEPEND	Depend on Dr to feel better	Removed
PUF2016	ACC_SPCLCARE	See specialist outside PCP office	Removed
PUF2016	ACC_SPCLKNOW	Specialist know enough of med history	Removed
PUF2016	ACC_D_ACCREL	Who goes with to Dr's office	Removed
PUF2016	HLT_OCPARKIN	Parkinson's disease (ever)	Removed
PUF2016	HLT_NCHRNCND	Number of chronic conditions	Removed
PUF2016	PRV_HYPESKIP	Skip/share BP meds b/c high cost	Removed

1.2   What's New in the 2017 MCBS PUF Data User's Guide?

The 2017 MCBS PUF Data User's Guide features enhanced content to help guide data users in utilizing the MCBS PUF for their own analyses and research. Data users can find a comparison of socio-demographic variables and values in the MCBS PUF and MCBS Survey File LDS in Exhibit 3.3.2. Exhibit 7.4.1 presents example research questions that can be answered using the MCBS PUF or the MCBS Survey File LDS.

2. OVERVIEW OF THE MCBS

Medicare is the nation's health insurance program for persons 65 years and over and for persons younger than 65 years who have a qualifying disability. The MCBS is sponsored by CMS and contains data provided by a representative national sample of the Medicare population. The MCBS is designed to aid CMS in administering, monitoring, and evaluating the Medicare program. A leading source of information on Medicare and its impact on beneficiaries, the MCBS contains important beneficiary data that are not available in CMS administrative data and plays an essential role in the monitoring and evaluation of beneficiary health status and health care policy.

The MCBS is a continuous, in-person, multi-purpose longitudinal survey representing the population of beneficiaries aged 65 and over and beneficiaries aged 64 and below with disabilities, residing in the United States. Fieldwork for the first round of data collection began in September 1991; since then, the MCBS has continued to collect and provide essential data on the costs, use, and health care status of Medicare beneficiaries. The MCBS has conducted continuous data collection for over 25 years, completing more than one million interviews provided by thousands of respondents.

The MCBS primarily focuses on economic and beneficiary topics including health care use and health care access barriers, health care expenditures, and factors that affect health care utilization. As a part of this focus, the MCBS collects a variety of information about the beneficiary, including demographic characteristics, health status and functioning, access to care, insurance coverage and out of pocket expenses, financial resources, and potential family support. The MCBS collects this information in three data collection periods, or rounds, per year. Over the years, data from the MCBS have been used to inform many advancements to the Medicare program, including the creation of new benefits such as Medicare's Part D prescription drug benefit.

For questions or suggestions on this document or other MCBS data-related questions, please email MCBS@cms.hhs.gov.

3. TECHNICAL AND PROGRAMMING INFORMATION

3.1 General Information

Unlike previous releases, the 2017 MCBS PUF is divided into three segments (Fall, Winter, and Summer), which allows for the release of data collected in non-fall rounds. The Fall segment includes data for 13,371 survey respondents. The samples for the Winter and Summer segments are subsets of the Fall segment sample. The Winter segment includes data for 11,083 respondents, and the Summer segment includes data for 8,165 respondents. All three segments include survey weights that allow for analysis that is nationally representative of the population of beneficiaries ever enrolled in Medicare at any point in 2017.

All records begin with a PUF_ID, a unique number for each beneficiary in the public use file. This PUF_ID serves to identify records in the three 2017 MCBS PUF segments only and cannot be used for linking to MCBS data files other than the PUF. The PUF_ID does link a beneficiary between the three 2017 MCBS PUF segments. Each beneficiary's PUF_ID is randomly generated each year, so it is not possible to link a beneficiary's data between years, and the value of the PUF_ID does not provide any information as to when the beneficiary first entered the MCBS.

All variables in the MCBS PUF are numeric or integer. Formats and values for each variable are available in the MCBS PUF codebook.

Variable groups contain prefixes to help users identify these groups by topic area. Exhibits 3.1.1 – 3.1.3 include information about these variable prefixes and the locations of the corresponding variables in the Survey File LDS data segments (i.e. the 2017 LDS Survey File individual files).

Exhibit 3.1.1: 2017 MCBS PUF Fall Segment Variable Prefixes, Number of Variables, Descriptions and Related LDS Survey File Segments

MCBS PUF Variable Prefix	Description	Number of PUF Variables in Grouping	LDS Survey File Data Segments
ADM_	Administrative Data	22	ADMNUTLS, HISUMRY, HITLINE
INS_	Insurance status, coverage, and type	12	HISUMRY, HITLINE
INT_	Interview characteristics	2	INTERV
DEM_	Age, sex, and race groups	11	DEMO
ACC_	Access to, use, and satisfaction with health care	23	ACCESSCR, SATWCARE, ASSIST
HLT_	Health conditions and limitations in activities of daily living	88	GENHLTH, VISHEAR, NAGIDIS, CHRNCOND
PRV_	Preventive care and physical activity	24	PREVCARE, NAGIDIS
RSK_	Health behavior risk factors	5	NICOALCO
FAL_	Falls	12	FALLS
HOU_	Housing characteristics	30	HHCHAR
MA_	Medicare Advantage supplement	6	MAPLANQX
PUFF	PUF ever enrolled weights (fall)	101	EVRWGTS

Exhibit 3.1.2: 2017 MCBS PUF Winter Segment Variable Prefixes, Number of Variables, Descriptions and Related LDS Survey File Segments

MCBS PUF Variable Prefix	Description	Number of PUF Variables in Grouping	LDS Survey File Data Segments
ACW__	Access to care (winter round)	87	ACCSSMED, USCARE
KNW_	Medicare knowledge	8	MCREPLNQ
PUFW	PUF ever enrolled weights (winter)	101	N/A

Exhibit 3.1.3: 2017 MCBS PUF Summer Segment Variable Prefixes, Number of Variables, Descriptions and Related LDS Survey File Segments

MCBS PUF Variable Prefix	Description	Number of PUF Variables in Grouping	LDS Survey File Data Segments
FIS_	Food insecurity	4	FOODINS
RXS_	Prescription medication use and access	33	RXMED
PUFS	PUF ever enrolled weights (summer)	101	N/A

3.2 Data File Information

Detailed information about variables in the MCBS PUF can be found in the PUF codebooks. The codebook includes SAS variable names, labels, a note to indicate which respondents were eligible for the question, the question number for the question that was asked in the survey, and a label which summarizes the question text. For certain variables, some of the questionnaire categories do not match those provided in the PUF because they were recoded due to disclosure concerns (e.g. "no usable vision" for variable HLT_ECTROUB and "deaf" for HLT_HCTROUB both reflect such recoding). Other variables were created by combining two variables, and their variable label indicates a recoded variable (e.g. HLT_ALZDEM). In cases where data were collected from both survey and administrative sources, especially for variables related to insurance coverage, administrative data supersede survey data (e.g. ADM_OP_MDCD).

For each variable, the formats and format values are included in the codebook:

- Values of .R indicate "refused" and .D indicate "don't know."
- All values of "inapplicable" have been combined with missing values.
- Unweighted frequencies of most variables included in the MCBS PUF are provided in the accompanying codebook file.

The MCBS PUF datasets are saved as SAS export files. Directions and sample SAS code are given below and also in Appendix B to help users read the datasets into SAS.

Assume the MCBS 2017 PUF export files (e.g. PUF2017_1_FALL.xpt) are downloaded into the folder "C:\MCBS\DOWNLOAD". The following SAS code can then be used to import the PUF fall segment into SAS:

LIBNAME PUFLIB 'C:\MCBS\SASDATA';

```
FILENAME F "C:\MCBS\DOWNLOAD\ PUF2017_1_FALL .XPT";
PROC CIMPORT LIBRARY=PUFLIB INFILE=F;
RUN;
```

Likewise, the SAS code above could be altered to import the PUF winter segment (SAS export file PUF2017_2_WINTER.xpt) or PUF summer segment (SAS export file PUF2017_3_SUMMER.xpt) into SAS. Additionally, a comma-separated values (CSV) file is available for use with other statistical software packages such as R® and STATA®.

A text file with SAS programming code to import the .xpt files, create formats, and apply SAS labels is provided for users.

3.3 Comparison to the LDS

The MCBS PUF differs from the MCBS Survey File LDS, because it has been evaluated for disclosure risk and additional steps were taken to protect respondent confidentiality. The 2017 MCBS PUF contains data for 13,371 beneficiaries and 677 variables, which is similar to the number of beneficiaries contained in the community-only 2017 MCBS Survey File LDS segments, but with fewer variables. Many Survey File LDS variables that posed a disclosure risk were dropped or recoded to create the variable set for the MCBS PUF.

Due to disclosure concerns, the MCBS PUF includes only those beneficiaries interviewed in the community, and thus excludes all beneficiaries who were in a health care facility during all interviews that year (n=1,844). Variables that were only created for facility residents are excluded.[1] Additionally, the MCBS PUF contains no health care utilization, cost or payment data (including Medicare claims data) for individual beneficiaries.

The MCBS PUF is free and available for download on the CMS website. For users interested in the MCBS Survey File and Cost Supplement File LDS, more information on the LDS process can be found at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/.

A summary of the differences between the two data products is presented in Exhibits 3.3.1.a and 3.3.1.b.

---

[1] Facilities are defined as nursing homes, retirement homes, domiciliary or personal care facility, distinct long term units in a hospital complex, mental health facility and centers.

Exhibit 3.3.1.a: Comparison between the 2017 MCBS PUF and 2017 MCBS Survey File LDS
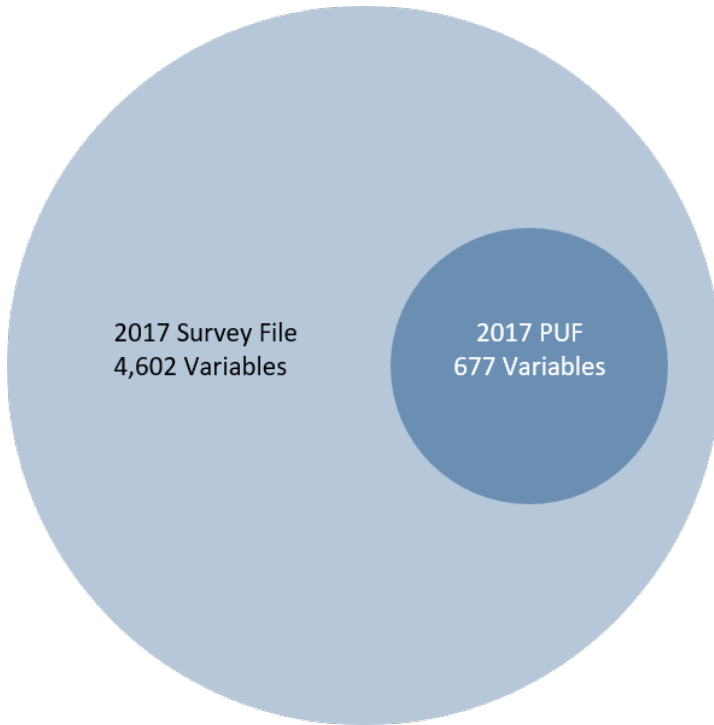
Exhibit 3.3.1.b: Comparison between the 2017 MCBS PUF and 2017 MCBS Survey File LDS

Domain	MCBS PUF	MCBS Survey File LDS
Population	Community	Community and facility
Number of variables	677 variables across three data segments	4,602 variables across 37 data segments
ID	PUF_ID; Randomly generated, can't be linked back to BASEID, changes each year	BASEID; Randomly generated, can't be linked back to health insurance claim (HIC) number, consistent between years
Date fields	NO	YES
Geographic identifiers	NO	YES
Cost/payment data	NO	YES
Demographic data	YES; All variables are categorical, limited age categories	YES; Continuous, all age variables available
Insurance coverage	YES; Summarized to annual level	YES; Monthly level
Identifiable plan-related information for MA or Part D	NO	YES
Population weights	Ever enrolled weights only	Both ever enrolled and continuously enrolled weights

Exhibit 3.3.2 details the socio-demographic variables and values available in the MCBS PUF and the MCBS Survey File LDS, for comparison purposes. Variables in the MCBS Survey File LDS, which do not have an equivalent in the MCBS PUF, are noted below the exhibit.[2]

Exhibit 3.3.2: Comparison of Socio-demographic Variables and Values in the MCBS PUF and MCBS Survey File LDS

Socio-demographic Characteristic	MCBS PUF Variables and Values	MCBS Survey File LDS Variables and Values
Gender	DEM_SEX (Gender): Male; Female	IV_SEX (Gender): Male; Female
Age	DEM_AGE (Age group): <65 years; 65-74 years; ≥75 years	D_STRAT (MCBS Sample age stratum): 0-44 years; 45-64 years; 65-69 years; 70-74 years; 75-79 years; 80-84 years; ≥ 85 years H_AGE (Age of beneficiary): Age of beneficiary in years
Armed Services	DEM_ARMED (Ever served in armed forces (AF)): Yes; No	SPAFEVER (Ever served in AF): Yes; No SPAFVIET: Served in AF during Vietnam era; SPAFKORE: Served in AF during Korean conflict; SPAFWWII: Served in AF during WWII; SPAFGULF: Served in AF during the Gulf War; SPAFIRAF: Served in AF during Iraq/Afghanistan conflict; SPAFPEAC: Served in AF during peace time; SPNGEVER: Ever active in National Guard/Reserve; SPNGALL: All active duty spent in National Guard SPNGDSBL: Disability from service SPAVARATE: Current VA disability rating
Education	DEM_EDU (Highest grade completed): Less than high school; High school or vocational, technical, business, etc.; More than high school	SPDEGRCV (Highest grade sampled person (SP) completed): No schooling; Nursery to 8th grade; 9th to 12th grade, but no diploma; High school graduate; Vocational, technical, business, etc.; Some college, but no degree; Associate's degree; Bachelor's degree; Graduate or professional degree
Income	DEM_INCOME (Income group of SP and Spouse): <$25,000; ≥$25,000	INCOME (Income range of SP and spouse): <$5,000; $5,000 - <$10,000; $10,000 - <$15,000; $15,000 - <$20,000; $20,000 - <$25,000; $25,000 - <$30,000; $30,000 - <$40,000; $40,000 - <$50,000; ≥$50,000 INCOME_H (SP and spouse total income last year): Range of values

---

[2]The MCBS Survey File LDS contains additional socio-demographic information, including location of residence, rural-urban commuting area details, the number of living children the respondent has, employment status, status of SSA check, and English proficiency, which do not have corresponding variables available in the MCBS PUF. Please note that additional race/ethnicity variables from administrative sources is are included in the MCBS Survey File LDS.

Socio-demographic Characteristic	MCBS PUF Variables and Values	MCBS Survey File LDS Variables and Values
Interview Language or Language Spoken at Home	INT_LANG (Language of interview): English; Spanish	INTLANG (Language of interview): English; Spanish WHATLANG (Language spoken at home): Spanish; French; German; Other OTHRLANG: Language other than English spoken at home): Yes; No
Marital Status	DEM_MARSTA (Marital status): Married; Widowed; Divorced/separated; Never married	SPMARSTA (Marital status of SP): Married; Widowed; Divorced; Separated; Never married
Metro Status	DEM_CBSA (Metro status): Metro area; Non-metro area	H_CBSA (Type of CBSA as designated by CBSA): Metropolitan area-population of ≥50,000; Micropolitan area-population between 10,000 to 50,000; Non-CBSA
Race/Ethnicity	DEM_RACE (Race/ethnicity group): Non-Hispanic White; Non-Hispanic Black; Hispanic; Other	D_RACE2 (Race of SP): Asian; African American; Native Hawaiian or Pacific Islander; White; American Indian or Alaska Native; More than one RACEASAI: Asian Indian; RACEASCH: Chinese; RACEASFI: Filipino; RACEASJA: Japanese; RACEASKO: Korean; RACEASVI: Vietnamese; RACEASOT: Other Asian; RACEPIHA: Native Hawaiian; RACENH: Native Hawaiian or Pacific Islander; RACEAI: American Indian or Alaskan Native; RACEPIGU: Guamanian Chamorro; RACEPISA: Samoan; RACEPIOT: Other Pacific Islander HISPORIG (Is SP of Hispanic or Latino origin?): Yes; No HISPORMA: Mexican/Mex American/Chicano; HISPORPR: Puerto Rican; HISPORCU: Cuban; HISPOROT: Other Hispanic/Latino/Spanish origin

| Socio-demographic Characteristic	MCBS PUF Variables and Values	MCBS Survey File LDS Variables and Values
Race/Ethnicity by Age Group	DEM_RE_AGE (Race/ethnicity age group): Non-Hispanic White, <65 years; Non-Hispanic White, 65-74 years; Non-Hispanic White, 75-84 years; Non-Hispanic White, 85+ years; Non-Hispanic Black, <65 years; Non-Hispanic Black, 65-74 years; Non-Hispanic Black, 75-84 years; Non-Hispanic Black, 85+ years; Hispanic, <65 years; Hispanic 65-74 years; Hispanic 75+ years; Other, <65 years; Other 65-74 years; Other 75+ years	Note: An MCBS Survey File LDS user could construct a similar race/ethnicity by age variable using D_RACE2, HISPORIG and D_STRAT.
Income Poverty Ratio Medicare Threshold	DEM_IPR_IND (Income Poverty Ratio Medicare Threshold): <=100% of the Federal Poverty Level; >100% and <=120% of the Federal Poverty; >120% and <=135% of the Federal Poverty; >135% and <=200% of the Federal Poverty; >200% of the Federal Poverty Level"	IPR_IND (Income Poverty Ratio Medicare Threshold): <=100% of the Federal Poverty Level; >100% and <=120% of the Federal Poverty; >120% and <=135% of the Federal Poverty; >135% and <=200% of the Federal Poverty; >200% of the Federal Poverty Level"

4. SURVEY OVERVIEW

4.1 Design of MCBS

In its initial design, the MCBS was to serve as a traditional longitudinal survey of the Medicare population. There was no predetermined limit to the duration of time a beneficiary, once selected to participate, was to remain in the sample. However, beginning in 1994, participation of beneficiaries in the MCBS was limited to no more than four years.

Although participation in the survey is limited to four years, MCBS data collection is continuous throughout the year with three distinct seasons (i.e., rounds) of data collection per year. In general, the three rounds are: winter (January through April); summer (May through August); and fall (September through December). The primary reason for the round to round design is to create shorter recall periods during the year to capture more complete and accurate health care costs and utilization from beneficiaries.

The 2017 MCBS data releases reflect data collected from January 2017 through early January 2018 (see Exhibit 4.1.1).

Exhibit 4.1.1: Typical MCBS Data Collection Year
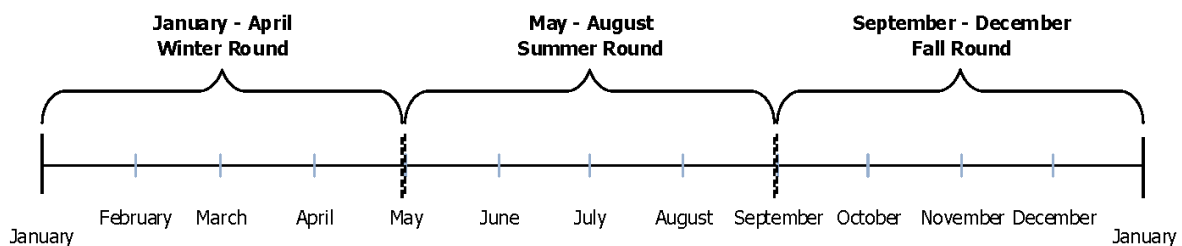
The initial interview of newly-selected respondents takes place in the fall round. Often the fall round begins early (i.e., late July or early August) to allow more time to locate and conduct outreach to these new survey respondents.

Subsequent rounds, which occur every four months, involve the re-interviewing of the same respondent (or appropriate proxy respondents) over a four year period (up to 12 interviews in total). Exhibit 4.1.2 depicts the timeline of participation for respondents selected to be in the MCBS sample.

Exhibit 4.1.2: MCBS Beneficiary Participation Timeline
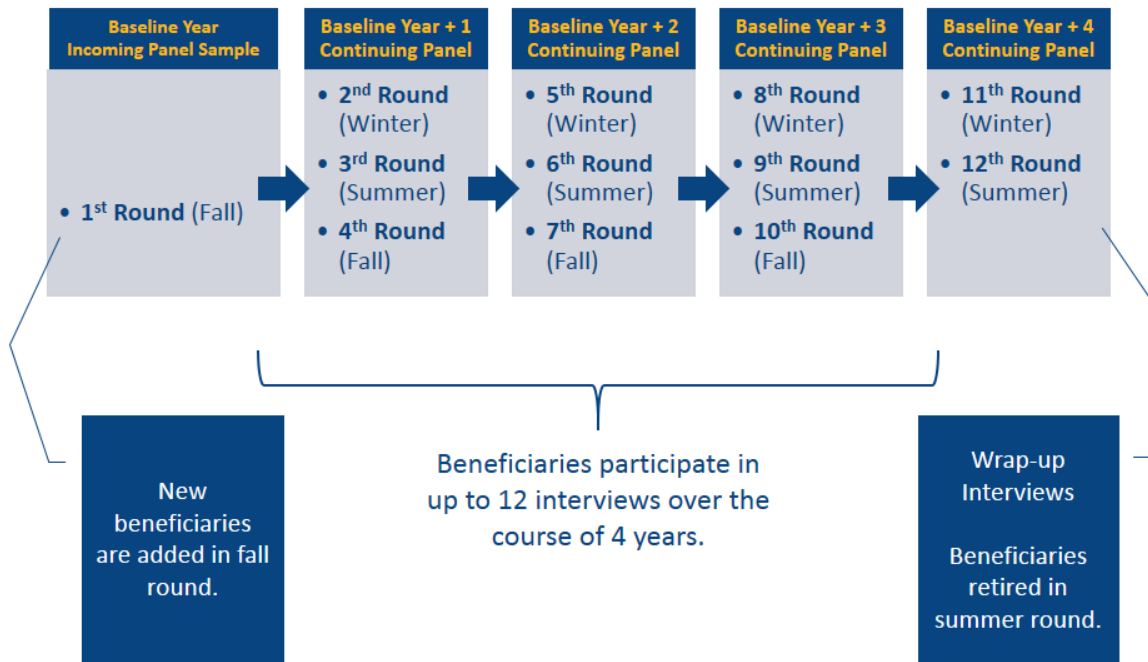
4.2 Sample Design

The MCBS uses a rotating panel sample design, covering the population of Medicare beneficiaries residing in the continental U.S. (48 states and the District of Columbia).[3] Each sampled beneficiary is scientifically selected as part of a panel and is interviewed up to three times per year.[4] One panel is retired during each winter round, and a new panel is selected to replace it each fall round (see Exhibit 4.2.1). The size of the new panel is designed to provide a stable number of respondents across all panels participating in the survey annually.

---

[3] Alaska and Hawaii are not included among the states from which the sample was selected due to the high cost of data collection in those areas; however, they are included in control totals for weighting purposes. Beginning in 2017, Puerto Rico data collection was discontinued.

[4] The three rounds per year are referred to seasonally. Respondents are interviewed in the winter round, the summer round, and the fall round each year.

Exhibit 4.2.1: 2012-2017 MCBS Rotating Panel Design

Data Collection Schedule			Panel					
Data Year	Season	Round#	2012	2013	2014	2015	2016	2017
2012	Winter	62						
	Summer	63						
	Fall	64						
2013	Winter	65						
	Summer	66						
	Fall	67						
2014	Winter	68						
	Summer	69						
	Fall	70						
2015	Winter/Summer*	71/72						
	Fall	73						
2016	Winter	74						
	Summer	75						
	Fall	76						
2017	Winter	77						
	Summer	78						
	Fall	79						

*The Summer and Winter Rounds in 2015 were combined due to a contract transition.

The MCBS employs a three-stage cluster sample design. Primary sampling units (PSUs) are made up of major geographic areas consisting of metropolitan areas or groups of rural counties. Secondary sampling units (SSUs) are made up of census tracts or groups of tracts within the selected PSUs. Medicare beneficiaries, the ultimate sampling units (USUs), are then selected from within the selected SSUs. The sample represented in the 2017 MCBS was drawn from 107 PSUs, which contained 1,250 SSUs. The MCBS sample is annually "supplemented" during the fall round to account for attrition (deaths, dis-enrollments, refusals) and current-year enrollees. Each annual supplement is referred to as the Incoming Panel sample.

Respondents for the MCBS are sampled from the Medicare Administrative enrollment data. The beneficiaries included in the MCBS PUF represent a randomly selected cross-section of all beneficiaries who were ever enrolled in either Part A or Part B of the Medicare program for any portion of 2017.[5] The MCBS PUF represents four separate MCBS panels identified by the year in which the panel was selected and first interviewed (i.e., for the 2017 MCBS PUF, the 2014, 2015, 2016 and 2017 panels). Exhibit 4.2.2 shows the distribution of each of the four panels included in the 2017 MCBS PUF.

For more information on the sample design, please see the Survey File Data User's Guide at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks-Items/2017SurveyFile.html?DLPage=1&DLEntries=10&DLSort=0&DLSortDir=descending.

---

[5] While beneficiaries included in the LDS releases represent both the ever enrolled and continuously enrolled Medicare population, the MCBS PUF solely represents the ever enrolled population.

Exhibit 4.2.2: 2017 MCBS Composition of Panels in the MCBS PUF

Data Year (Fall)	Number of Beneficiaries Selected
2014[7]	2,259
2015	1,851
2016	3,450
2017	5,811

4.3 Eligibility

4.3.1 Medicare Population Covered by the 2017 LDS and MCBS PUF

Beginning in 2015, beneficiaries who became eligible for Medicare Part A or B and enrolled anytime during the sampling year were eligible to be sampled as part of the annual panel. This is a substantial change in practice; prior to 2015, only beneficiaries enrolled in Medicare by January 1 of the sampling year were eligible to be sampled in an annual panel.

4.4 Case Types

MCBS respondents are classified by their phase of survey participation (i.e., Incoming or Continuing) and interview participation (i.e., Community or Facility), which is determined by residence status. Although they appear in the MCBS LDS releases, beneficiaries for whom only Facility-administered interviews were conducted during the data collection period are not included in the MCBS PUF. Researchers interested in the population of beneficiaries residing in facilities will need to use the MCBS LDS, as discussed in Section 3.3.

4.4.1 Incoming and Continuing Cases

Every fall round of data collection, a new panel of sampled beneficiaries is added to the total sample to replace the panel of respondents completing a final interview and exiting the MCBS in the prior summer round. Respondents new to the MCBS and introduced in the fall round are referred to as Incoming Panel cases. After the initial interview, they are referred to as Continuing cases.

4.4.2 Community Interviews

Approximately 90 percent of the interviews take place in the respondent or proxy's own residence or in a neutral interview location, such as a library or public venue. These interviews are called Community interviews; the remaining 10 percent of the interviews are from beneficiaries residing in a facility, and these beneficiaries are not included in the MCBS PUF.

Over the course of a four year period, however, it is not uncommon for respondents to enter long-term care facilities (e.g., nursing homes) or to go back and forth between community and facility settings. To obtain an accurate representation of the experiences of all Medicare beneficiaries, the MCBS includes beneficiaries wherever they reside, even if they enter or reside in a facility for the duration of their four years with the study. The MCBS PUF excludes those beneficiaries who were in a facility for each interview, due to disclosure concerns.

4.5 Interviewing and Training Procedures

4.5.1 Overview of Data Collection

CMS contracts with NORC at the University of Chicago (NORC) to administer the MCBS. A national team of specially trained and certified NORC field interviewers conduct either face-to-face interviews with MCBS respondents or their designated proxies or they conduct face-to-face interviews with Facility administrators on behalf of respondents. The first interview conducted for an Incoming Panel respondent is relatively short, as it does not collect health care utilization or cost data. Continuing respondent interviews are longer, as field interviewers collect information about the respondent's health care utilization and associated costs.

4.5.1.1 Overview of Recruitment of Beneficiaries and Scheduling Procedures

Medicare beneficiaries selected to participate in the MCBS receive a letter and a brochure in the mail, introducing the study and explaining that an interviewer from NORC will contact them to schedule an appointment. For Incoming Panel respondents, initial contact is typically made in person; for Continuing respondents, outreach to set an appointment for the next interview is most often made by phone. If respondents are unable to answer questions or require language assistance, respondents can enlist the help of an assistant, such as a family member, to help complete the interview; a proxy can also respond on behalf of the respondent if the respondent is incapacitated or unable to complete the interview. For Spanish speaking respondents, a Spanish version of the Community instrument is available, and bilingual interviewers conduct the interview.

4.5.1.2 Computer-Assisted Personal Interviewing (CAPI)

Field interviewers complete MCBS interviews using a Computer-Assisted Personal Interviewing (CAPI) instrument loaded on a laptop. The CAPI program automatically guides the field interviewer through the questions, records the answers, and contains logic and skip flows that increase the output of timely and high quality data. The CAPI also contains follow-up questions where data were missing from the previous interview. When the interview is completed, the CAPI system allows the field interviewer to transmit the data electronically to the NORC central office in a secure manner.

4.5.2 Interviewer Training

Nationally, the MCBS employs an average of approximately 200 field interviewers[6], who participate in a combination of several targeted training initiatives and careful coaching and monitoring activities throughout data collection. Each training is customized to the level of experience of the interviewer (new to MCBS or MCBS-experienced), the type of interview (Community or Facility), the type of sample (Incoming Panel or Continuing), and the unique requirements of each round (changing questionnaire sections or data collection protocols). Field interviewers who are new to MCBS are always trained in-person; experienced field interviewers participate in a periodic in-person training program and receive continuous online refresher training. Weekly field memos issued to all field managers and field interviewers cover important data collection tips, provide answers to interviewer questions, and reminders about how to handle complicated scenarios.

---

[6] The fall round starts with a higher number of field interviewers which, over the course of the year, is reduced due to staff turnover. Each summer, a small cohort of new interviewers is hired for the MCBS.

4.5.3 Privacy and Data Security

Field interviewer training stresses the importance of maintaining respondent privacy, and project protocols are documented within the field interviewer manual. Field outreach and contacting procedures also maintain and ensure confidentiality. These procedures include the utilization of standard computer security protocol (dual authentication password protection for each interviewer laptop) and restrictions on submitting personally identifiable information (PII) through electronic mail. All MCBS survey staff directly involved in data collection and/or analysis activities are required to sign a Non-Disclosure Agreement and a confidentiality agreement.

NORC and CMS are committed to protecting respondent confidentiality and privacy, and both organizations diligently uphold provisions established under the Privacy Act of 1974, the NORC Institutional Review Board (IRB), the Office of Management and Budget (OMB), and the Federal Information Security Management Act of 2002. As stated in the MCBS OMB documentation, the information collected for MCBS is protected by NORC and by CMS. Respondent data are used only for research and statistical purposes. As required under the Privacy Act of 1974, identifiable information is not disclosed or released without the consent of the individual or the establishment, except to those involved in research (Public Law 93-579).

5. QUESTIONNAIRES

5.1 Overview

The MCBS Questionnaire structure features two components (Community and Facility), administered based on the beneficiary's residence status. Within each component, the flow and content of the questionnaire varies by interview type and data collection season (fall, winter, or summer). There are two types of interviews (Baseline, Continuing) containing two types of questionnaire sections (Core and Topical). See Exhibit 5.1 within the Survey File Data User's Guide for a depiction of the MCBS Questionnaire structure: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks-Items/2017SurveyFile.html.

- Community Component: Survey of beneficiaries residing in the community at the time of the interview (i.e., their residence or a household). Interview may be conducted with the beneficiary or a proxy.

- Facility Component: Survey of beneficiaries residing in facilities such as long-term care nursing homes or other institutions at the time of the interview. Interviewers do not conduct the Facility component with the beneficiary, but with staff members located at the facility (i.e., facility respondents). This is one of the key differences between how the Community and Facility components are administered.

Within each component, there are two types of interviews – a Baseline interview and a Continuing interview.

- Baseline: The initial questionnaire administered to beneficiaries new to the study; administered in the fall round of the year they are selected into the sample (interview #1).

- Continuing: The questionnaire administered to beneficiaries as they progress through the study once they have completed a Baseline interview (interviews #2-12).

Depending on the interview type and data collection season (fall, winter, or summer), the MCBS Questionnaire includes Core and Topical sections:

- Core: These sections are of critical purpose and policy relevance to the MCBS, regardless of season of administration. Core sections collect information on beneficiaries' health insurance coverage, health care utilization and costs, and operational management data such as locating information.

- Topical: These sections collect information on special interest topics. They may be fielded every round or on a seasonal basis. Specific topics may include housing characteristics, drug coverage, and knowledge about Medicare.

See Sections 5.2 and 5.3 within the Survey File Data User's Guide for additional detail on the 2017 Core and Topical sections: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks-Items/2017SurveyFile.html

6. SAMPLING

6.1 Medicare Population Covered by the 2017 MCBS PUF

The MCBS data releases are a reflection of enrolled Medicare beneficiaries residing in the continental United States[7]. Excluded are residents of foreign countries and U.S. possessions and territories. The MCBS PUF further excludes Medicare beneficiaries who only provided facility-based interviews during the data year. The MCBS data releases include two overlapping but differing populations:

- The ever enrolled population represents individuals who were enrolled in Medicare at any time during the calendar year. This population includes beneficiaries who enrolled during the calendar year 2017 as well as those who dis-enrolled or died prior to their fall interview.[8] The ever enrolled population includes beneficiaries who were enrolled in Medicare for at least one day at any point during 2017.

- The continuously enrolled population represents only those individuals continuously enrolled in Medicare from January 1, 2017 up to and including their fall interview; this specifically excludes beneficiaries who enrolled during the calendar year 2017 and those who dis-enrolled or died prior to their fall interview. The concept of continuously enrolled is consistent with the concept of being exposed or "at risk" for using services up to and including their fall interview.

The MCBS PUF includes weights that represent the ever enrolled population, whereas the MCBS LDS releases include separate sets of weights that represent both the ever enrolled and continuously enrolled Medicare population.

Exhibits 6.1.1 and 6.1.2 present estimates of the size of the ever enrolled, community-dwelling Medicare population by race, and age (as of December 31, 2017) by sex, in the 2017 MCBS PUF. Exhibit 6.1.3 presents the aggregated estimates of the size of the ever enrolled, community-dwelling Medicare population overall and by sex and race.

Exhibit 6.1.1: Estimated Male Community Medicare Beneficiaries by Race and Age, in the 2017 MCBS PUF

Race	Age as of 12/31/2017	Weighted Count
White non-Hispanic	Under 65 years	2,718,318
	65-74 years	9,542,486
	75+ years	6,562,151
Black non-Hispanic	Under 65 years	647,740
	65-74 years	1,017,300
	75+ years	508,576
Hispanic	Under 65 years	432,969
	65-74 years	1,093,868
	75+ years	518,818

---

[7] Prior to 2017, Puerto Rico was also included as part of the MCBS sampling geography. Beginning in 2017, Puerto Rico was removed, and only beneficiaries residing in the continental U.S. were eligible to be sampled for the MCBS. The decision to remove Puerto Rico from the sample was based largely on the fact that Medicare in Puerto Rico is very different and difficult to compare to (or combine analytically with) Medicare in the U.S.

[8] Note that data collection for beneficiaries who enrolled during 2017 and died in 2017 after enrollment but before their fall interview was still pursued through attempts at conducting proxy interviews.

Race	Age as of 12/31/2017	Weighted Count
Other*	Under 65 years	491,614
	65-74 years	1,195,874
	75+ years	437,045

SOURCE: 2017 MCBS PUF, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

Exhibit 6.1.2: Estimated Female Community Medicare Beneficiaries by Race and Age, in the 2017 MCBS PUF

Race	Age as of 12/31/2016	Weighted Count
White non-Hispanic	Under 65 years	2,361,989
	65-74 years	11,095,709
	75+ years	8,365,125
Black non-Hispanic	Under 65 years	741,274
	65-74 years	1,373,402
	75+ years	891,597
Hispanic	Under 65 years	452,206
	65-74 years	1,286,710
	75+ years	792,673
Other*	Under 65 years	304,832
	65-74 years	984,167
	75+ years	703,097

SOURCE: 2017 MCBS PUF, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

Exhibit 6.1.3: Estimated Community Medicare Beneficiaries by Race and Age, in the 2017 MCBS PUF

Group	Subgroup	Weighted Count
Overall Total		54,519,539
Sex	Male Total	25,166,759
	Female Total	29,352,780
Race	White non-Hispanic Total	40,645,778
	Black non-Hispanic Total	5,179,889
	Hispanic Total	4,577,244
	Other Total*	4,116,628

SOURCE: 2017 MCBS PUF, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

6.2 Targeted Population and Sampling Strata

Historically, the targeted population for the MCBS consisted of persons enrolled in one or both parts of the Medicare program, that is, Part A or Part B, as of January 1 of the applicable sample-selection year, and whose address on the Medicare files is in one of the 48 contiguous states (excludes Alaska and Hawaii), the District of Columbia, or Puerto Rico. Beginning in 2015, the targeted population for the MCBS consisted of Part A and/or Part B enrollees as of December 31 of the sample-selection year. For example, for Fall 2014 (the round in which the 2014 Panel included in the 2017 MCBS data was first selected), the targeted population included those individuals enrolled as of January 1 of 2014. For Fall Rounds 2015, 2016, and 2017 (the three rounds in which the 2015, 2016, and 2017 Panels, included in the 2017 MCBS data, were selected), the targeted population included those individuals enrolled as of December 31 of 2015, 2016, and 2017, respectively. Beginning in 2017, Puerto Rico was removed from the MCBS sample; thus, the MCBS sample was selected entirely from the continental U.S. and the District of Columbia beginning with the 2017 Panel.

For more information on the sampling strata, please see Section 6 of the Survey File Data User's Guide https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks-Items/2017SurveyFile.html?DLPage=1&DLEntries=10&DLSort=0&DLSortDir=descending.

Exhibit 6.2.1 displays the beneficiaries included in the 2017 MCBS PUF, by age and ethnicity.

Exhibit 6.2.1: 2017 Panel of Selected Beneficiaries by U.S. Hispanic and U.S. Non-Hispanic Ethnicity Classification and Age Category

Age Category as of 12/31/2017	TOTAL Sample Size	TOTAL Weighted	Hispanic Sample Size	Hispanic Weighted	Non-Hispanic Sample Size	Non-Hispanic Weighted
Under 65 years	2,252	8,150,942	230	885,175	2,022	7,265,767
65-74 years	4,349	27,589,516	390	2,380,579	3,959	25,208,937
75+ years	6,770	18,779,081	567	1,311,491	6,203	17,467,590
Total	13,371	54,519,539	1,187	4,577,244	12,184	49,942,295

SOURCE: 2017 MCBS PUF.

6.3 Primary and Secondary Sampling Units

All of the panels in the 2017 data releases are distributed across the subset of 104 non-Puerto Rican PSUs from the redesigned sample of 107 PSUs selected in 2001.[9] These PSUs are a representative, national sample of beneficiaries who are geographically dispersed throughout metropolitan areas and groups of non-metropolitan counties. Recall that SSUs are census tracts or groups of contiguous tracts within the selected PSUs.

6.4 Sample Selection

The MCBS sampling design provides nearly self-weighting (i.e., equal probabilities of selection) samples of beneficiaries within each of the 14 sampling strata. Within the selected PSUs and SSUs, a systematic sampling

---

[9] An original set of 107 PSUs was selected at the start of the MCBS in 1991; the current PSUs were selected in 2001 with a focus on maximizing overlap with the original set of PSUs. With the rotating panel design, the PSU redesign is transparent to data users and no special processing is required. For more details on the PSU redesign, see Lo, A, A Chu, and R Apodaca. "Redesign of the Medicare Current Beneficiary Survey Sample," Proceedings of the Survey Research Section of the American Statistical Association 2002.

scheme with random starts is employed for selecting beneficiaries.[10] For each continuing beneficiary, the survey questions corresponding to the Survey File data release are administered in the fall of the data collection year. Similarly, for beneficiaries new to the MCBS, the survey questions are administered as part of the initial fall Baseline interview.

---

[10] The MCBS 2017 Panel was drawn by systematic random sampling with probability proportional to probabilities of selection with an independently selected random start within each PSU. For more information on this sampling method, please see the MCBS Methodology Report, available at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Codebooks-Items/2016_MCBS_Methods_Report.html?DLPage=1&DLEntries=10&DLSort=0&DLSortDir=descending

7. TECHNICAL NOTES ON USING THE DATA

7.1 Weights and Variance Estimation

The sample design of MCBS includes stratification, clustering, multiple stages of selection, and disproportionate sampling. Furthermore, the MCBS sampling weights reflect adjustments for survey nonresponse. These survey design and estimation complexities require special consideration when analyzing MCBS data (i.e., it is not appropriate to assume simple random sampling).

To obtain accurate estimates from MCBS data, for either descriptive statistics or more sophisticated analyses based on multivariate models, the survey design complexities need to be taken into account by applying MCBS weights to produce estimates and using an appropriate technique to derive standard errors associated with the weighted estimates.

Each segment of the MCBS PUF includes ever enrolled, full sample cross-sectional weights (Fall: PUFFWGT; Winter: PUFWWGT; Summer: PUFSWGT). The MCBS PUF segments do not include the continuously enrolled cross-sectional weight in order to protect the confidentiality of the respondents. The continuously enrolled cross-sectional weights are available, however, in the LDS.

The ever enrolled cross-sectional weights apply to both the Continuing sample (beneficiaries sampled between 2014-2016) and to the Incoming Panel sample (beneficiaries sampled in 2017). These weights are intended for use in cross-sectional statistics involving the total (combined) Fall 2017 sample. Each weight is greater than zero for all beneficiaries on the file. The ever enrolled cross-sectional weights should be used to make estimates of parameters for the Medicare population who were enrolled at any point in 2017 (i.e., the ever enrolled population).

To generate estimates using the data from merged seasonal segments, the data user must always use the weights that correspond to the segment that is the smaller subset of the other. The samples for the Winter and Summer segments are subsets of the Fall segment sample. Thus, when generating estimates from a merged Summer segment and Fall segment analytic file, the data user must use the Summer segment weights. There are no weights that support joint analysis between the Summer segment and Winter segment, as each segment has a different set of beneficiaries included.

To permit the calculation of random errors due to sampling, a series of replicate weights were computed. Unless the complex nature of the MCBS is taken into account, estimates of the variance of a survey statistic may be biased downward. The replicate weights included in the MCBS PUF can be used to calculate standard errors of the sample-based estimates. The replicate cross-sectional weights in the Fall segment are labeled PUFF001 through PUFF100 corresponding to the ever enrolled weight PUFFWGT. The replicate cross-sectional weights in the Winter segment are labeled PUFW001 through PUFW100 corresponding to the ever enrolled weight PUFWWGT. The replicate cross-sectional weights in the Summer segment are labeled PUFS001 through PUFS100 corresponding to the ever enrolled weight PUFSWGT.

Most commercial software packages today include techniques to accommodate the complex design, through replicate weight approaches. Among these are STATA®, SUDAAN®, R®, and the complex survey procedures in SAS®. When using the replicate weight approach to variance estimation, the variance estimation method of balanced repeated replication using Fay's adjustment of 0.3 is recommended. Sample code in SAS, STATA and R for estimating statistics can be found in Appendix B. Analysis of subgroups should utilize the domain functions within the statistical package of your choice (e.g. the DOMAIN statement in SAS, or the OVER function in STATA); restricting the sample to the subgroup and then performing an analysis would lead to slightly biased point estimates and estimates of variance.

7.2 Item Non-Response

As in any other survey, some respondents could not, or would not, supply answers to some questions.[11] Item non-response rates are generally low in the MCBS data, but the analyst still needs to be aware of the missing data and be cautious about patterns of non-response.[12] The calculation of the study-wide response rates generally follows the guidelines specified in the American Association for Public Opinion Research (AAPOR) and OMB. For the ever enrolled cross-sectional sample represented by the MCBS 2017 Survey File, the calculated overall response rate was 65.2%. This rate includes non-response for persons in facilities, as the response rates are not calculated separated by questionnaire component. Therefore, this may not reflect exactly the response rate for the sample represented in the 2017 MCBS PUF, which excludes beneficiaries for whom only Facility-administered interviews were conducted during the data collection year.

7.3 Subgroup Analysis

When analyzing survey data, researchers are often interested in focusing their analyses on specific subgroups of the full population sample (e.g., Medicare beneficiaries age 65 and over, Hispanics, or females). A common pitfall, when performing sub-group analysis of survey data using variance estimation methods such as Taylor-series, is to delete or exclude observations not relevant to the subgroup of interest. Standard errors for MCBS estimates are most accurate when the analytic file includes all beneficiaries. However, when replicate weights are used for variance estimation, deleting observations not relevant to the subgroup of interest prior to analyzing the subgroup will still produce accurate standard errors. Almost all statistical packages provide the capability to limit the analysis to a subgroup of the population.

7.4 Example Research Questions

Exhibit 7.4.1 presents example research questions by topic, differentiating between those that can be addressed by the MCBS PUF or MCBS Survey File LDS, and those that can only be addressed by the MCBS Survey File LDS. These research questions are intended to illustrate the types of analyses researchers can perform using either the MCBS PUF or MCBS Survey File LDS, and are not meant to be a comprehensive list of possible research questions that can be answered with these data. The variables that are unique to the MCBS Survey File LDS and not contained in the MCBS PUF are italicized below.

Exhibit 7.4.1: Example Research Questions That Can be Answered Using the MCBS PUF or MCBS Survey File LDS

Topic	Example Research Questions Addressed Using the MCBS PUF or MCBS Survey File LDS	Example Research Questions Addressed Using the MCBS Survey File LDS
Quality of Patient Experience	Are there differences in Medicare beneficiaries' quality of patient experience across socio-demographic characteristics?	Are there differences in Medicare beneficiaries' quality of patient experience between those with *limited English proficiency* and those who are proficient in English?

---

[11] This is different from when an individual refuses to participate in the survey altogether, which is called unit non-response. Unit non-response is discussed in detail in the MCBS Methodology Report, Section 9.

[12] In the LDS files, item non-response types are indicated by missing type codes in SAS, including refusal to answer, don't know the answer, and invalid skip. The code .D represents a "don't know" response, the code .R represents a "refused" response, and .N represents an "invalid skip" response.

Topic	Example Research Questions Addressed Using the MCBS PUF or MCBS Survey File LDS	Example Research Questions Addressed Using the MCBS Survey File LDS
Access to Care	Among Medicare beneficiaries, are there differences in access to care by income (below or above $25,000) and level of education?	Among Medicare beneficiaries, are there differences in access to care by *employment status*?
Preventive Care	Are there differences in receipt of preventive care (e.g., pneumococcal vaccination) by age?	Are there differences in receipt of preventive care (e.g., pneumococcal vaccination) by *patient activation*; that is, the degree to which beneficiaries actively participate in their own health care and decisions concerning that health care?
Cost and Utilization	Among Medicare beneficiaries, are there differences in the average number of inpatient hospital stays between 2013 and 2017 (PUF data were first available in 2013)?	Are there changes in Medicare beneficiaries' *out-of-pocket costs over the last 10 years* (between 2007 and 2017)?
Health Behaviors or Social Determinants of Health	Are there differences in the percentage of Medicare beneficiaries who smoke cigarettes or consume excessive amounts of alcohol by socio-demographics?	Are there differences in the percentage of Medicare beneficiaries who have *used e-cigarettes* by socio-demographics*?*
Health Status and Functioning	Which disease conditions are more common among Medicare beneficiaries who had falls requiring medical help?	Are there differences in the disease conditions associated with falls *between 2007 and 2017*?
Housing Characteristics	What is the profile (e.g., socio-demographic characteristics and disease conditions) of Medicare beneficiaries with accessibility modifications (e.g., a ramp, bathroom modification and/or railing) in the house?	Are *specific IADL or ADL limitations* associated with accessibility modifications among Medicare beneficiaries?

8. REFERENCES

Eicheldinger, Celia, and Arthur Bonito. "More accurate racial and ethnic codes for Medicare administrative data." Health care financing review 29, no. 3 (2008): 27.

Lo, A, A Chu, and R Apodaca. "Redesign of the Medicare Current Beneficiary Survey Sample." *Proceedings of the Survey Research Section of the American Statistical Association* (2002): 2139-44.

APPENDICES

9. APPENDICES

Appendix A: Glossary

Baseline interview: The initial questionnaire administered to new respondents to the study; administered in the fall round of the year they are selected into the sample (interview #1).

Beneficiary: An individual selected from the MCBS sample about whom the MCBS collects information. Beneficiary may also refer to a person receiving Medicare services who may or not be participating in the MCBS.

Community component: Survey of beneficiaries residing in the community (i.e., not in a long-term care facility such as a nursing home) during the reference period covered by the MCBS interview.

Continuing interview: The questionnaire administered to repeat respondents as they progress through the study (interviews #2-12).

Continuously enrolled (aka always enrolled): A Medicare beneficiary who was enrolled in Medicare from the first day of the calendar year until the fall interview and did not die prior to the fall round. This population excludes beneficiaries who enrolled during the calendar year 2017, those who dis-enrolled or died prior to their fall interview, residents of foreign countries, and residents of U.S. possessions and territories other than Puerto Rico.

Core sections: These sections of the MCBS Questionnaire are of critical purpose and policy relevancy to the MCBS, regardless of season of administration.

Crossover: A respondents who enters a long-term care facility setting (e.g., nursing homes) or who alternates between a community and a facility setting.

Ever enrolled: A Medicare beneficiary who was enrolled at any time during the calendar year including those who dis-enrolled or died prior to their fall interview. Excluded from this population are residents of foreign countries and of U.S. possessions and territories other than Puerto Rico.

Facility component: Survey of beneficiaries residing in facilities, such as long-term care nursing homes or other institutions, during the reference period covered by the MCBS interview. Interviewers do not conduct the Facility component with the beneficiary, but rather, with a staff member located at the facility.

Incoming Panel sample (formerly known as Supplemental Panel): A scientifically selected group of sampled beneficiaries that enter the MCBS in the fall round of a data collection year. One panel is retired during each summer round, and a new panel is selected to replace it each fall round. Panels are identified by the data collection year (e.g., 2017 panel) in which they were selected.

Long-term care facility: A facility that provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities of daily living.

Medicare: Medicare is the federal health insurance program for people who are 65 or over, certain younger people with disabilities, and people with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a transplant, sometimes called ESRD). The different parts of Medicare help cover specific services:

- Hospital Insurance (Part A): covers inpatient hospital stays, care in a skilled nursing facility, hospice care, and some home health care.

- Medical Insurance (Part B): covers certain doctors' services, outpatient care, medical supplies, and preventive services.

- Medicare Advantage (Part C): an alternative to coverage under traditional Medicare (Parts A and B), a health plan option similar to a Health Maintenance Organization (HMO) or Preferred Provider Organization (PPO) administered by private companies.

- Prescription Drug Coverage (Part D): additional, optional coverage for prescription drugs administered by private companies.

For more information, please visit the Medicare.gov website at https://www.medicare.gov/sign-up-change-plans/decide-how-to-get-medicare/whats-medicare/what-is-medicare.html

Medicare Advantage (MA): Medicare Advantage Plans, sometimes called "Part C" or "MA Plans," are offered by private companies approved by Medicare. An MA provides, or arranges for the provision of, a comprehensive package of health care services to enrolled persons for a fixed capitation payment. The term "Medicare Advantage" includes all types of MAs that contract with Medicare, encompassing risk MAs, cost MAs, and health care prepayment plans (HCPPs).

Medicare beneficiary (aka, beneficiary): An individual who meets at least one of three criteria (is aged 65 years or over, is under age 65 with certain disabilities, or is of any age with End-Stage Renal Disease) and is entitled to health insurance benefits. (Source: https://www.cms.gov/Medicare/Medicare-General-Information/MedicareGenInfo/index.html).

Panel: see Incoming Panel sample

Primary Sampling Unit (PSU): Primary sampling unit refers to sampling units that are selected in the first (primary) stage of a multi-stage sample ultimately aimed at selecting individual elements (Medicare beneficiaries in the case of MCBS). PSUs are made up of major geographic areas consisting of metropolitan areas or groups of rural counties.

Race/ethnicity: Responses to race and ethnicity questions are self-reported by the respondent. Respondents who reported they were white and not of Hispanic origin were coded as white non-Hispanic; those who reported they were black/African-American and not of Hispanic origin were coded as black non-Hispanic; persons who reported they were Hispanic, Latino/Latina, or of Spanish origin, regardless of their race, were coded as Hispanic; persons who reported they were American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, or other race and not of Hispanic origin were coded as other race/ethnicity.

Respondent: The person who answers questions for the MCBS; this person can be the beneficiary, a proxy, or a staff member located at a facility where the beneficiary resides.

Round: The MCBS data collection period. There are three rounds each year, winter (January through April), summer (May through August), and fall (September through December).

Secondary Sampling Unit (SSU): SSUs are made up of census tracts or groups of tracts within the selected PSUs.

Topical sections: Sections of the MCBS Questionnaire that collect information on special interest topics. They may be fielded every round or on a seasonal basis. Specific topics may include housing characteristics, drug coverage, and knowledge about Medicare.

Ultimate Sampling Unit (USU): USUs are Medicare beneficiaries selected from within the selected SSUs.

Appendix B: Technical Appendix – Sample Code and Output

Please note that the code examples below use the fall PUF weights, which begin with the prefix "PUFF." You should use the fall PUF weights only if you are using data from the PUF fall segment that has not been merged with data from any other segment. If you are analyzing data from the winter, summer, or a combination of PUF segments, please see the discussion in section 7.1 of this document as to which weights should be used.

SAS Analysis Statements

Cross-tabulations

```
proc surveyfreq data=<Analytic dataset> VARMETHOD = brr (fay=.30);
        table <Var name>  / row  chisq lrchisq;
        weight PUFFWGT;
        repweight PUFF001 - PUFF100;
run;
```

Subgroup Analysis

```
proc surveyfreq data=<Analytic dataset> VARMETHOD = brr (fay=.30);
        table <Var name> *  <Subgroup variable> / row  chisq lrchisq;
        weight PUFFWGT;
        repweight PUFF001 - PUFF100;
run;
```

STATA Analysis Statements

Declare dataset as survey sample with replicate weights

```
svyset _n [pweight= PUFFWGT ], brrweight(PUFF001 - PUFF100) fay(.3) vce(brr) singleunit(missing)
```

For categorical variables, use:

```
svy brr,  fay(.3) : tabulate <Var name> <Var name>
```

For subgroup analysis use:

```
svy brr, subpop(if <Subgroup>) fay(.3) : tabulate <Var name>, over(<Var name>)
```

R Analysis Statements

Declare MCBS survey design object with replicate weights

```
mcbs <- svrepdesign(
  weights = ~PUFFWGT,
  repweights = "PUFF[001-100]+",
  type = "Fay",
  rho = 0.3,
  data = <Source dataset>,
  combined.weights = TRUE
  )
```

For categorical variables, use:

```
svytable(~<Var name>,  design=mcbs)
```

For subgroup analysis use:

```
mcbs_subgrp <- subset(mcbs, <Subgroup criteria>)
svytable(~<Var name>,  design=mcbs_subgrp)
```